

Avian Flu: The creation of expectations in the interplay between science and the media

Brigitte Nerlich and Christopher Halliday

IGBiS, University of Nottingham, UK

Address for correspondence

Professor Brigitte Nerlich

Institute for the Study of Genetics, Biorisks and Society

Law and Social Sciences Building, West Wing

University Park

University of Nottingham

Nottingham NG7 2RD

UK

phone: 44-0-0115-8467065; fax: 44-0-0115-846-634

e-mail: Brigitte.Nerlich@nottingham.ac.uk

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Abstract

This paper examines the emerging cultural patterns and interpretative repertoires in reports of an impending pandemic of avian flu in the UK mass media and scientific journals at the beginning of 2005, paying particular attention to metaphors, pragmatic markers ('risk signals'), symbolic dates and scare statistics used by scientists and the media to create expectations and elicit actions. This study complements other work on the metaphorical framing of infectious disease, such as foot and mouth disease and SARS, tries to link it to developments in the sociology of expectations and applies insights from pragmatics both to the sociology of metaphor and the sociology of expectations.

Avian Flu: The creation of expectations in the interplay between science and the media

Little birds with scarlet legs,
Sitting on their speckled eggs,
Eye each flu-infected city.
(W. H. Auden, 1951)

Introduction

The war against infectious disease has been won. Advances in science, especially the discovery of antibiotics and the use of vaccines, have led to the closing stages of humanity's struggle with infectious disease. Or so the story went - until quite recently (Armstrong et al. 1999). The rise of antimicrobial resistance, alongside increased recognition of the threat of new infectious diseases, most notably AIDS and most recently SARS, has removed any such complacency. Lately, fear of disease has been fuelled yet again by the emergence of a new highly pathogenic virus strain of

avian influenza that could jump the species barrier between birds and humans, and, in a worst-case scenario, cause the next global pandemic of influenza.

The story of global influenza pandemics began in 1918 when 50 million people were infected worldwide with an influenza strain subsequently identified as avian in origin and recently reconstructed in an American laboratory (Tumpey et al. 2005). Although there had been one other flu pandemic before that date, in 1889, when the Russian flu suddenly appeared in St Petersburg and, in a matter of months, spread across most of the world (Smith 1995), 1918 seems to serve as an 'index' date in news coverage of existing and emerging epidemics and pandemics. The 1918 pandemic ('Spanish flu') was followed by two other 20th-century pandemics in 1957 ('Asian flu') and 1968 ('Hong Kong flu').

The story of a new 21st-century virus that could lead to a new pandemic began in 1997 when bird flu broke out in Hong Kong and infected humans. This was a new strain of avian flu, the highly pathogenic H5N1 strain (Lin et al. 2000; Cyranoski 2001). 18 people were infected and six people died; all had had close contact with chickens. Chicken exports were banned, about 1.6 million chickens were slaughtered and the virus seemed to have been eradicated.

That event alarmed public health authorities, as it marked the first time that an avian influenza virus was transmitted directly to humans and caused severe illness with high mortality. Alarm mounted again in February 2003, when an outbreak of H5N1 avian influenza in Hong Kong caused 2 cases and 1 death in members of a family who had recently travelled to southern China. Another child in the family died during that visit, but the cause of death is not known. (WHO 2004)

In 2003 Hong Kong also suffered greatly from another new infectious disease, Severe Acute Respiratory Syndrome or SARS, which had initially been taken for avian influenza when it had broken out in the Guangdong province of China in November

2002. In 2003 another outbreak of avian flu, this time the H7N7 strain, occurred in the Netherlands and killed a 57-year-old veterinarian. At the same time the H5N1 strain re-emerged and devastated a commercial poultry farm in South Korea. In 2004 outbreaks of H5N1 occurred in Thailand, Vietnam, Cambodia, Indonesia and China, where pigs and wild geese were also infected. In January 2004 laboratory tests confirmed the presence of the H5N1 avian influenza virus in human cases of severe respiratory disease in the northern part of Vietnam. So far (November 2005) 130 humans have been infected and half of them have died. In the autumn of 2005 the virus spread from East Asia to Russia and to Eastern Europe, carried by migrating birds. A consignment of finches infected with H5N1 arrived in Britain and two parrots died in a quarantine centre.

On February 5, 2005 an editorial for *New Scientist* warned readers that a bird flu outbreak in which the virus would be transmitted not from poultry to people but between people could kill 1.5 billion and that science and society were not prepared (Editorial/*New Scientist* 2005). Similar warnings had appeared in the UK press in 2003 and 2004, but were published with increased frequency following the publication of a paper investigating suspected cases of human-to-human transmission in January 2005. Our article examines the UK press reaction to such warnings between January and June 2005, with a focus on a two-months corpus of 51 articles published in UK national newspapers in February and March 2005, a time when the British government announced a first version of its pandemic preparedness plan. The Department of Health published the final version on 19 October 2005 (DoH 2005).

Avian influenza, more popularly known as bird flu, has attracted increased media coverage since the end of 2004, a coverage that intensified even more after this analysis of a mid-2005 corpus was completed, especially in October 2005 (see Nerlich in prep).

In their seminal article on the rise and fall of risk reporting, Kitzinger & Reilly (1997) have examined which risks attract public attention and why the media pick up

(and then drop) a particular 'risk' issue (see Washer, 2006). Although avian flu was one of a series of emergent or re-emergent diseases which had affected the UK directly or threatened to affect it, such as AIDS, BSE, foot and mouth disease (FMD) and SARS, in 2004 it was still what Joffe and Haarhoff, in their article on Ebola (Joffe and Haarhoff 2002), call a 'far flung illness' about which the UK media could not easily write human interest stories, one of the key factors in attracting media attention. Instead, the initial surge in UK media coverage explored in this article seems to have been triggered by one of the other factors explored by Kitzinger and Reilly, namely the increasing amount of activity by pressure groups, professional bodies and politicians, in our case the World Health Organisation (WHO) in particular. A second surge in media interest, later in 2005, had a somewhat different source and needs to be explored separately. At the beginning of 2005 avian flu was still 'out there' in a foreign land, affecting 'others'. Towards the end of 2005 the virus had spread to Eastern Europe and had even been detected in a consignment of birds in the UK. From being 'out there', it now seemed to be 'almost here'. This increased the proximity of the threat and with it its newsworthiness.

Aims and objectives

This paper intends to complement other work on the sociology of infectious diseases and on the metaphorical framing of infectious diseases and invasive species, especially in relation to FMD and SARS (Nerlich, Hamilton, and Rowe 2002; Wallis and Nerlich 2005; Washer 2004). Unlike previous papers, which mainly focused on establishing links between conceptual metaphor theory (Lakoff and Johnson 1980) and a sociology of metaphors (Maasen and Weingart 2001), this paper attempts to establish a link between the sociology of metaphors, the sociology of expectations (which is mostly used at present to study the hype and hope associated with new biotechnologies in the context of Science and Technology Studies). It will be argued that the newspaper articles examined for this paper can only be understood from the point of view of a sociology of negative expectations. This type of analysis is closely

related to research done on the 'sociology of fear' (Strong 1990, Tudor 2003, Béland 2005), which might be regarded as a counterpart to a sociology of expectations. Insights from studying the media coverage of avian influenza could also be used to explore links between the 'risk society' thesis (Beck 1992) and the 'fear society' thesis (Furedi 2002, 2005), but this will not be the focus of our article.

We argue that just like the positive expectations or predictions surrounding biotechnology, negative expectations or predictions in the form of 'early warnings' can have a performative force; they can spur individuals and governments into actions, such as buying avian flu masks advertised on almost every website dealing with avian flu, or publishing avian flu contingency plans. As Nik Brown points out: "expectations mobilize the future into the present" (Brown 2003: 3). However, if early promises and early warnings are issued too early, too frequently or in a context of heightened scientific and social uncertainty, they may also have the opposite effect of demoralising individuals and society, neutralising urgency, producing cynicism and indifference and stifling sustained investment.

In order to contribute to a sociology of negative expectations from a linguistic (metaphorical) perspective, we want to find answers to questions such as: Which rhetorical devices, be they pragmatic markers, metaphors or references to pertinent historical events, were used by experts and the media to create which type of images of the future in order to mobilize what kind of action in the present? What were metaphors and other devices used for -- to inform, to warn, to blame, etc. -- and by whom were they used, the experts or the media?

Material

In order to study the UK media coverage of the avian flu threat we used LexisNexis Professional, which provides full-text access to newspapers. We initially carried out a broad search of all UK newspapers between 2000 and 2005, then of UK national newspapers between January and June 2005, thereafter a narrower one of national newspapers in February and March 2005, using the key words *avian* and *pandemic* to

define our corpus. The two-months sample formed our main corpus of 51 articles. The size of this corpus might appear to be small were we conducting a wholly quantitative investigation. But it is appropriate and also just manageable for an in-depth qualitative analysis and, in our case, for testing a new conceptual link between metaphor analysis, pragmatics and the sociology of expectations.

Additionally, we searched the web for background material on avian flu in scientific publications published between January 2005 and June 2005, and cross-matched the results with sources quoted in UK newspapers (see Stöhr 2005, Ungchusak et al., 2005, Gottlieb 2005, AAAS 2005, DoH 2005, WHO 2005, Editorial/Nature 2005, Editorial/New Scientist 2005, Editorial/Lancet 2005, Editorial/Scientific American, 2005).

Methods and conceptual framework

A mixture of quantitative and qualitative methods were used in the analysis of the media output. Qualitative content and conceptual analysis were combined with pragmatics, metaphor analysis and the sociology of expectations. We used a soft version of content analysis to search for frequency patterns in the use of metaphors and pragmatic markers. Coding therefore focused on identifying markers, such as 'warn', 'alarm', 'frighten' and so on, and on the identification of metaphors. The first was achieved through the use of a simple search function applied to our corpus. To identify metaphors human judgement is still needed, although some automated metaphor searching is being pioneered by Cameron for example (Cameron and Stelma 2004). For this small study the two authors, both well acquainted with the cognitive linguistic literature on metaphor (Lakoff and Johnson 1980), each coded the corpus for metaphors and compared results. The overlap was almost a 100%.

Pragmatics served as the link between metaphor analysis and the sociology of expectations. It allowed us to study language in situation and to analyse pronouncements by scientists and the media as 'speech acts' "in which the rules of language and of society combine in determining meaning, intended as a socially

recognized object sensitive to social expectations about the situation in which the utterance to be interpreted is embedded" (Capone 2005: 1355).

It is customary to distinguish in linguistics between semantics, which deals with the abstract meaning of words and sentences, and pragmatics, which deals with the meaning or force of utterances or speech acts used in situation. Pragmatics has its roots in Austin's philosophy of language, developed in the 1950s (Austin 1962). From a pragmatic point of view one can distinguish between three factors in verbal communication: Locution (what utterances say), illocution (what utterances do - perform), and perlocution (what utterances achieve). The sentence "This dog is dangerous", for example, states that 'this dog is dangerous', but it can have the illocutionary force of warning someone about this particular dog (a force that can be made more explicit by saying "I hereby warn you that this dog is dangerous") and it can have the perlocutionary effect of frightening or alarming the person to whom this utterance is addressed. The intention of the speaker is to warn the hearer and the expectation is that the hearer or audience takes appropriate action. The force of speech acts can be conveyed indirectly through the situation of use or directly through illocutionary force markers (e.g. *warn*, *alert*, etc.). Perlocutionary force markers can indicate the effect that speech acts have had on hearers or are supposed to have on hearers (e.g. *alarm*, *frighten*, *scare*, *fear*, *threaten*, etc.).

For our purposes we have also looked at the words used by scientists and the media to convey the 'perlocutionary' force of events or statistics, as in "Few cases of human-to-human transmission have been suspected - one of the key factors in a pandemic - but scientists are so *alarmed* that the World Health Organisation has declared it one of the gravest threats to global health" (Henderson 2005:18, italics added). This might be going beyond what Austin would have called perlocutionary force markers, but, like the use of the more straightforward illocutionary force markers, as in 'scientists *warn* that...', such uses of 'alarm' or 'frighten' are important to note for a study of the creation of expectations in the interplay between science

and the media. They are part of what some social amplification of risk theorists, such as Kaspersen (1992), might call 'risk signals'.

Klaus Stöhr, coordinator of the World Health Organisation's (WHO) influenza programme, wrote, for example, in his editorial for the *New England Journal of Medicine* (NEJM) on January 27, 2005: "the warning signal has been clearer than ever since 1968, when the last pandemic occurred, and there is an unprecedented opportunity to intensify worldwide preparedness" (2005: 405) and: "The emergence of human cases of avian influenza A (H5N1) virus infection in Asia is an unprecedented warning and has given the world more time to prepare than anyone might have expected." (p. 406) Scientists issuing these direct and indirect early warnings expect global preparedness to increase, or, to quote a speech act theorist: "to bring about effects that modify a situation and change the roles of the participants within it or to bring about other types of effects" (Capone 2005: 1357). The occurrence of H5N1 is therefore not only a threat but also an opportunity to science, national governments and global health organisations to 'get their act together'. Early warnings, like early promises, have a pragmatic force.

In his early writings Austin made a distinction between constatives (such as "The cat is on the mat") and performatives (such as "I hereby pronounce you man and wife"), a distinction that later collapsed. Many speech act theorists now regard all utterances as 'performative' in one way or another – even statements or constatives can 'do' things in this sense. And this seems to apply not only to speech acts, but also to expectations. Brown has argued that

Expectations can be performative also in the sense that promises are performative. The phrase 'I promise X' is not just a description, it makes the person who enunciates the phrase accountable for doing X (or a version of X). [...] this is how early promises *and early warnings* lead to reactions and sometimes to escalating arguments for and against [...]. (2003:3, italics added)

It has become clear in recent years that metaphors, too, can be not just representational, but performative. "The work of metaphor", Bono argues, "is not so much to represent features of the world, as to invite us to *act upon* the world *as if* it were configured in a specific way *like* that of some already known entity or process." (Bono 2001: 227) Metaphors can be used by experts and the media to shape visions of the past and/or the future to try and affect our social and political actions in the present. They can also be used to orientate users (whether as institutions, groups or individuals) to particular possibilities for action and have an effect on material investment (Brown 2003).

The study of pragmatic markers (risk signals), expectations and metaphors and the links between them is important as the way they function in discourse, be it scientific, political or media discourse, has direct implications for the allocation or misallocation of resources. It is also useful to study how their function changes, intentionally or unintentionally, when they move from one sphere of discourse to another, especially from scientific journal to the mass media. Monitoring early promises on the one hand and early warnings on the other (both of which use metaphors and other rhetorical devices) should be part of the social study of science, as early promises might eventually give way to disillusionment, and as too many early warnings might give way to cynicism, disengagement and a decline in trust in science and science-based policy (Brown 2003: 3)

This problem is particularly acute in the case of avian flu where the strategic deployment of pragmatic markers and metaphors may contribute to what we shall describe as a 'rhetoric of fear', which, while implicating the need for appropriate 'actions', has an air of ambiguity as to the nature of these actions, when to execute them and how much governmental resources should be allocated to them.

In the following, we shall first summarise the results of a mainly quantitative survey of the UK press reaction to such early warnings, then delve into a more

qualitative analysis focusing on the pragmatic markers and metaphors used by scientists, experts, politicians and the UK media.

Patterns of press coverage

We first tried to establish when exactly avian flu caught the UK media's attention. Avian flu was not a topic that attracted any significant press coverage until 2004, when there was suddenly an explosion of articles, just as there was an explosion of the virus (for this search we examined *all* UK newspapers, regional and national). In the year 2000 five articles were published on the topic, in 2001 only one (probably because of the outbreak of FMD and September 11), in 2002 three, in 2003 14 (this was the year of the SARS outbreak and of an outbreak of avian flu, the H7N7 strain, in the Netherlands); then, in 2004, 112 articles were published, followed by 156 articles just between January and July 2005.

Figure 1: Articles published on avian flu and pandemics in all UK newspapers between January 2000 and July 2005

This explosion of interest seems to have been triggered by an announcement by the WHO in December 2004 urging all countries to develop or update their pandemic strategies. In January 2005 the WHO then published a report entitled "Avian influenza: assessing the pandemic threat" (WHO 2005). Chapter 1 was entitled: "The H5N1 outbreaks in 2004: a pandemic in waiting?" - which evokes the image of a killer about to pounce on an unsuspecting victim and can be regarded as a case of an indirect warning, an image which is however mitigated by the question mark. At the same time the *NEJM*, *New Scientist* and the *BMJ* all speculated about human-to-human transmission of bird flu.

To get a clearer picture of the UK press activity in the months that followed this global warning, we broke down the number of articles published by the national newspapers only for each month between January and July 2005 (when we began to write this article). The news activity peaked in February and March 2005 and we therefore chose these two months of press coverage as a corpus for closer qualitative analysis. This sample contains 51 articles.

Figure 2: Articles on avian flu and pandemics published in UK national press between January and July 2005

We also wanted to assess which national newspapers were the most active in the field. *The Times*, a centre right broadsheet, published by far the most articles on avian flu, sometimes several a day (as part of the main newspaper and as part of the supplement, *Times 2* and its weekend health/lifestyle supplement on Saturdays). It was followed by *The Guardian*, a left/environmental newspaper. Surprisingly, the other two broadsheets, *The Daily Telegraph* and *The Independent* published almost as few articles on the matter as the tabloids. This distribution will probably look quite different for the latter part of 2005 when the tabloids, especially the *Daily Mail*, took up the avian flu story in a big way, as it was now perceived as knocking on 'our' door.

Most articles published in the national newspapers in February and March 2005 appeared in the leader pages of the home news sections, which is testament not only to the perceived significance of the reports made by the WHO and other organisations but also to the media's explicit acknowledgement of the global nature of the threat. Several newspapers, however, were keen to domesticate the potential effects of the virus by confining their reports largely to an analysis of the potential risks faced by Britons or "Brits". The articles were usually to be found in the Health

sections, but there were also several featured reports, particularly in the month of March, and the pandemic threat was occasionally mentioned in smaller sections, including *The Times's* "Public Agenda", *The Guardian's* "Comment and Analysis" and even the Sport section of *The Mirror*. Article length ranged from minor references of under 100 words to longer featured items of over 1000 words, creating an average length of about 400 words. Only two articles were long investigative pieces, one published in the *Daily Mail* on 5 March and one published in the *Observer Magazine* on 20 March. The (much awaited) announcement of the UK government's plans for a potential pandemic – that is the response to the WHO's warnings – on March 2 attracted by far the most coverage. The plans were published on March 4. On March 5 *The Lancet*, one of the most prestigious British medical journals, published an editorial entitled "Avian influenza: perfect storm now gathering?" (Lancet, 2005) and reported that: "On February 21, Julie Gerberding, Director of the US CDC called avian influenza a 'very ominous' threat to human beings. Shigeru Omi, WHO Western Pacific Regional Director, said the world is in 'the gravest possible danger of a pandemic'." The phrase 'gravest possible danger' was quoted six times in the two-months corpus (February-March, 2005).

One article investigating a possible human-to-human transmission of avian flu, published in the *NEJM* on January 27, 2005, seems to have been seminal (Ungchusak et al. 2005) in stirring press interest. It was accompanied by an editorial by Stöhr entitled "Avian influenza and pandemics - research needs and opportunities" (Stöhr 2005) These articles were pre-featured in the popular scientific journal, *New Scientist*, on 21 January, 2005 and picked up and commented upon in the *BMJ* on 29 January, 2005, which published an article under the rather misleading headline: "Research confirms human to human transmission of avian flu". All three sources were quoted in the UK press and by experts speaking to the UK press.

At several points during the two-months period that we monitored more closely, more independent experts or critics made their appearance. They were: Professor John Oxford, of London University's Queen Mary and Westfield College, a

virologist and one of the world's leading authorities on the disease (who went on to dominate the media coverage in late 2005), Professor Hugh Pennington, retired head of the Institute of Animal Health and a microbiologist at Pirbright in Surrey (who had been a very vocal critic of the slaughter policy during the FMD crisis in 2001), and Professor Roy Anderson, a leading epidemiologist and infectious diseases expert (whose research group at Imperial College, London, had been instrumental in shaping governmental policy during the FMD crisis in 2001).

Many articles debated the use of Tamiflu (Day 2005), an anti-viral drug made by Roche, which can reduce the severity of flu symptoms. Tamiflu would be the only available treatment for avian flu for which no vaccine exists and for which a vaccine can only be developed once the new strain has emerged. Some experts believe that the use of Tamiflu could buy time so that vaccines targeted against any particular strain of human flu, mutated from avian viruses, could be developed. Professor Oxford was one of the experts who contributed to this debate in interviews with the *Observer Magazine* and the *Independent*, for example.

Professor John Oxford, of London University's Queen Mary and Westfield College - one of the world's leading authorities on the disease - says that Britain would need some 20 million courses. He said: "*This is a national emergency.*" (Independent, 27/02/05, italics added)

On March 2 Dr John Reid, the then Secretary of State for Health, announced the stockpiling of 14.6 million courses of Tamiflu as part of a pandemic plan. The reassurance this might have provided to 'the public' was however short-lived, as a few days later

Professor Hugh Pennington told Radio 4's Farming Today programme: 'I think there is a case for looking very seriously at feather imports and saying, well, is it wise to be bringing in feathers from countries where this bird flu virus is

now pretty well out of control? 'The risk is real that we might be importing the avian flu virus along with the feathers.' (Mail on Sunday, 06/03/05, italics added)

And finally, Professor Anderson, who had been involved in the FMD crisis and had also spoken out during the SARS crisis, is reported as saying:

'I have never seen the international community as agitated about anything as this,' he told The Observer. The disease has a mortality rate of around 76 per cent, and the average age of death is 17. 'Although it sounds alarmist, the balanced view is that *we are overdue a major pandemic*,' Anderson said. (Observer, 27/03/05, italics added)

In the early months of 2005 (a time when political parties in the UK prepared for a general election), experts and various representatives of opposition parties speaking to the press accused the government of not doing enough about avian flu, that is, about not acting forcefully enough on the advice by the WHO. Comparisons were made with Australia, France and Canada (which had suffered a major outbreak of SARS in 2003), which, it seems, were all better prepared for a pandemic than the UK. Dr Reid and Chief Medical Officer Professor Sir Liam Donaldson defended the government's plans, trying to steer a course between preparing for a potential pandemic and making people anxious about this process.

Our analysis of the newspaper output, featuring several key 'trigger quotes', shows that from the end of January onwards (when articles began to appear in the *NEJM*, the *BMJ*, *The Lancet* and *New Scientist*) experts seem to have led a rather systematic campaign of instilling fear in governments and citizens, and of urging governments to prepare for 'action'. The underlying motive of heightening awareness for an impending pandemic was probably to use the scientific status of experts to

cause a shift in public policy, e.g. to increase national and global resource allocation for public health.

The heightening of pandemic awareness was achieved through the strategic use of what one can call 'scare quotes' in leading scientific journals and press releases, scare statistics, such as the 1968 Hong Kong pandemic which killed 30,000 Britons and over 1 million people worldwide, scare historical references, such as the flu pandemics of 1918 and 1997, referenced 18 and 11 times respectively in our sample of 51 articles, and scare diseases such as smallpox, mentioned 4 times. The fear campaign was led on several fronts, from the WHO downwards (Klaus Stöhr and Shigeru Omi), through the US CDC and the AAAS (Nancy Cox and Julie Gerberding), to UK pandemic pundits (John Oxford and Hugh Pennington). UK government officials, by contrast, tried to be more reassuring. This, again, changed towards the end of 2005 when Liam Donaldson caused some panic when he announced several times that at least 50,000 people might die if a flu pandemic struck the UK.

In the sociology of representations (Wagner and Kronberger 2001) such symbolic dates and statistics are seen as circulating in specific milieus and can be used to make risk events meaningful within these contexts, to provide certain 'visions' of risk events. These symbols, just as the pragmatic markers we shall analyse later, can be compared to what social scientists working with the social amplification of risk model (Kasperson 1992) call 'risk signals' which can either intensify or attenuate awareness of risk. Such symbolic signals are important because they serve as anchors used by the media to relay knowledge between the scientific and lay realms (Joffe and Haarhoff 2002: 956). The 1918 pandemic, for example, functioned predominantly as an 'alarmist anchor'. In the following we shall see how symbolic risk signals of this kind, as well as pragmatic markers, such as 'warn' or 'alarm', which are risk signals of a different kind, were integrated into distinctive discursive patterns.

Discursive patterns and cultural meanings

In this section the focus will be on revealing patterns of discourse that structured the UK media coverage of avian flu in early 2005. These patterns cluster around a scientific discourse of 'early warnings' which, once it entered the sphere of the media, contributed to a 'rhetoric of fear' in the newspapers that reported them and a governmental discourse of 'wait and see' which contributed to a 'rhetoric of blame' in the media. The two discourses raised quite different expectations, one of urgent action and one of caution, a clash that might have contributed to a general 'discourse of uncertainty'. We shall first examine how warnings were framed, then how metaphors were used and finally how historical reference points and references to other diseases contributed to these three main discursive clusters.

An emergent rhetoric of fear

The warnings issued by scientists and experts either in editorials of scientific journals or in interviews with the media from the end of January 2005 onwards were reported in the UK press. In this process their illocutionary force was amplified in various ways. This process of amplification occurs when the situation of use (in this case the newspaper article using information gleaned from scientific journals and interviews with experts) is exploited intentionally in order to enrich the interpretation of utterances. However, this new context of use can also amplify a message unintentionally, by provoking associations with popular culture and popular imagination that were not foreseen by the experts and scientists and possibly even not by the journalists themselves. In this process the relatively moderate rhetoric of fear displayed by scientists can be pragmatically and sometimes dramatically strengthened in the process of citation or iteration (Slinn 1999). Whether this then leads to an 'amplification' of risk as perceived by the reading public is another matter, which we cannot address in this paper (Pidgeon et al. 2003; Petts and Murdoch 2001)

Illocutionary force markers such as *warn* were used 57 times in the corpus of 51 articles; perlocutionary force markers such as *fear* and *threaten* were used 34 and 37 times respectively in the corpus. Interestingly, the majority of illocutionary force markers were used in relation to statements made by scientific authorities, with 53 out of the 57 uses of *warn* referring to an expert, scientist or a named scientific body. In most cases illocutionary force markers were used by the newspapers to introduce quotes made by experts or scientists indirectly, for example, "Bird flu could put Britain in quarantine, warns scientist" (Observer, 27/03/05), but only in very few cases were they used to frame direct verbatim quotes. They were however used strategically by the experts themselves, such as Stöhr. Cox of the American CDC, on the other hand, used a perlocutionary force marker when she said "I think it is very *frightening* to see such a high case fatality rate" (quoted in Express, Guardian, Times, italics added).

The quantitative analysis of our two-month sample, together with the study of 'trigger quotes' and pragmatic markers, shows that the much-maligned journalists were not wholly responsible for overemphasising the possibility of an avian flu threat. Scientists lead a concerted campaign of fear and warning, which consequently made the media sit up and listen and with them governments around the world.

This pragmatic strengthening achieved by the media was further enhanced by the repetition of scientists' own use of adjectives such as *inevitable*, *ominous*, and *overdue*, and by their use of disaster metaphors, which we shall analyse below. These rhetorical enhancements may have contributed to a rhetoric of fear, based on negative visions and evoking negative expectations, which went far beyond the initial warnings of a pandemic threat.

For many years the media have been "characterised as the distorting lens obscuring communication between scientists and the public" (Hargreaves 2001). In the case of avian flu the media seem to have been rather more the direct conduit of scientific information than scientists and scientific journal editors ordinarily might only

dream of. The journalistic lens seems not so much to have distorted the message as to 'heat it up', just as a lens can bundle light and generate heat.

The politics of fear and its consequences

It was argued at the beginning of this article that all utterances, as well as expectations and metaphors can have a performative force and that "*expectations mobilize the future into the present*" (Brown 2003: 3). The early warnings issued by the scientists and amplified by the media mobilised governments to implement pandemic preparedness plans, mobilised the pharmaceutical industry, especially Roche, to rapidly increase the production of antivirals and even began to mobilise individuals into exploring ways to escape avian flu infection (although this became much more pronounced during the autumn of 2005 and led to an unexpected rise in the uptake of the usual seasonal flu vaccination, a subsequent shortage of vaccines, which was then blamed on the actions of GP which demonstrates that the creation of expectations can have unexpected consequences). However, it was also pointed out that too many early warnings might lead to cynicism and disengagement. In our corpus, this effect of negative hype could be detected in three contributions, towards the end of our period of monitoring.

On March 12, Dr Copperfield, a GP and 'media' doctor, wrote a piece for a Saturday supplement of *The Times* in which he pointed out that

The big numbers being thrown around the press at the moment refer to the "inevitable" worldwide outbreak of the avian influenza virus, which is limbering up to leap across the species barrier and to start picking on human beings.

Yes, folks. Forget about your evaporating pension, you're all going to die in the upcoming flu pandemic. But look on the bright side; it's 20 years overdue, so we're lucky to have survived this long.

After the BBC had broadcast a docudrama about the eruption of a supervolcano in Wyoming on March 13 and 14, 2005, Carol Sarler from the *Express* entitled her short commentary: "Another date with doom" and wrote:

If the supervolcano in Wyoming blows, billions of us will die. That's if the avian flu pandemic hasn't got us first... Or if we haven't all been scared to death by useless predictions of doom that we can't do a damn thing about anyway. (*Express*, 16/03/05)

Mick Hulme, a *Times* columnist and editor of the critical online journal *spiked-online* (where other articles on the culture of fear were published at the time) wrote a polemical piece in *The Times*: "Get under the sofa or we'll get avian flu when the supervolcano erupts":

Never mind Little Britain [title of a popular comedy programme], we appear to be living in Chicken Little Britain.

Whereas the eponymous heroine of that children's story imagined the sky falling on her head, many now fantasise about being wiped out by supervolcanoes, asteroids or avian flu. The difference is that today's doom-mongering is not dreamt up by some panicky bird-brain. It is spread by leading scientists, serious media organisations and government bodies. In Chicken Little Britain, the hens have taken over the farmyard. (*Times*, 18/03/05)

This indicates that some opposition was developing to what might be perceived as the over-hyping of a bird flu threat by the 'experts', a phenomenon that sociologists like Furedi might regard as another instance of a 'politics of fear' (Furedi 2005). "The New Oxford Dictionary of English defines hype as 'extravagant or intensive publicity or promotion'. In many cases, such publicity or promotion includes expectations that

prove in the fullness of time to be overly optimistic." (Sung and Hopkins, in press)

We shall have to wait and see whether in our case the expectations promoted by the scientists were overly alarmist or not. If they turn out to be too pessimistic we might have to think about the following scenario, evoked by the *New York Times* at the end of 2005:

"There's so much expectation for it [avian flu] to develop into a pandemic that if it does not in the next year or two it's quite possible you would see a backlash like the 1976 experience," said Dr Taubenberger [referring to a predicted epidemic of swine fever among humans in the US in 1976, a prediction that did not come true]. "What I fear is that people would make the conclusion, falsely, that influenza is not such an important public health problem." (Pollack 2005: 5)

Having reviewed the use of scare-quotes by experts and the use of pragmatic markers by the newspapers who quote them, let us now take a closer look at the metaphors used in stories about avian flu. Were they the product of public or scientific imagination? And what was their function? Were they, like the 'early warnings', intended to make their audience sit up, listen and perform certain actions? Did they have rhetorical disadvantages as well as rhetorical advantages in persuading audiences to act?

Metaphors

The discourses and metaphors used to frame diseases and epidemics have become a prominent subject within linguistics as well as the sociology of health and illness and studies of AIDS, FMD and SARS have shown that disease language and action are closely linked, especially via metaphors, images and narratives, which evoke certain expectations, attitudes, scenarios and ways of acting upon them.

When reading the early UK media coverage of a possible bird flu pandemic we were astonished to find that metaphors, at least relatively creative metaphors, were only rarely used. There were almost no military metaphors for example, which is perhaps indicative of the uncertainty about what to do about a pandemic 'in waiting'. War-related metaphors were themselves of the almost invisible kind, subtly exploiting the conceptual metaphor PREPARING FOR AN EMERGENT INFECTIOUS DISEASE IS PREPARING FOR WAR.¹ Antiviral drugs were seen as a 'first line of defence', a 'shield' etc. and experts were on the 'frontline' of vaccine preparation. Only one headline in the tabloid newspaper the *Sun* used the word *war* explicitly '£200M war on bird flu' (02/03/04) in the context of the announcement of the UK government's avian flu contingency plan.

Personification of the virus, which had also been a major rhetorical device for reporting on FMD and SARS in the UK press (Wallis and Nerlich 2005), was somewhat more prevalent, but not yet really salient as the virus has not yet become 'active', in the sense of spreading from human to human.

More innovative metaphors, some relatively conventional and one totally new one were introduced by the experts, not by the newspapers. Just like journalists, the scientists using them exploited a well-established "system of associated commonplaces" rooted in popular imagination and popular opinion. As the philosopher of metaphor Max Black said (speaking about the projection from a secondary subject, the metaphor's source domain, e.g. *storm*, onto a primary subject, the metaphor's target domain, e.g. *avian flu*):

¹ We follow the convention established in cognitive linguistics to indicate conceptual metaphors, such as ARGUMENTS ARE WAR in small capitals. Conceptual metaphors are overarching ways of conceptualising relatively abstract ideas in more concrete form, and subsume expressions such as "She shot down his argument", "He surrendered to her brilliant repartee"; "They fought over the last issue" etc.

[...] the secondary subject, in a way partly depending upon the context of metaphorical use, determines a set of what Aristotle called endoxa, current opinions shared by members of a certain speech community. (Black 1993: 28)

These metaphors, depicting avian flu as a storm, volcano or flood, turned the virus into a natural or elementary force or an animal, similar to some of the metaphors of fire, flood and predator used during the FMD outbreak. The most novel metaphor was used by Professor John Oxford:

THE VIRUS IS A GREYHOUND:

'At the moment it's a slow greyhound of a virus. It's when it develops into a normal greyhound that we're in for it,' he [John Oxford] says. [...] But one thing is certain: if the virus does become - to recall Professor Oxford's analogy - a normal greyhound, jet travel will speed it round the globe in days.
(Observer Magazine, 20/03/04)

The greyhound metaphor can be regarded as an expression of the conceptual metaphor DEALING WITH DISEASE IS A RACE, which was prominent during the FMD epidemic, an epidemic that developed suddenly and spread very fast. The speed with which FMD spread was blamed on globalisation and the increase in animal movements across the UK. Given global (jet) traffic, the new virus, just like SARS in 2003, may spread equally rapidly leaving equally little time to prepare or to be 'outraced' by science.

During the SARS outbreak, which coincided with the Iraq war, some commentators had talked about the virus as a form of natural "bioterrorism," and had discussed it in the context of modernity and globalisation. This was also the focus of two contributions to the avian flu debate in our sample.

THE VIRUS IS A NATURAL BIOTERRORIST

Prof Pennington said: "[...] this is the biggest threat to the human race. It far outweighs bioterrorism, this is natural bio-terrorism. It won't spare anybody."
(Express, 04/03/05)

"Forget al-Qaeda, the biggest terrorist threat we face today is Mother Nature."
[quote from interview with John Oxford] (Guardian, 20/03/05)

Here the virus becomes one of the most feared and chilling 'enemies' of modern times. In his recent book, *Anthrax: Bioterror als Phantasma*, Sarasin (2004) argues that all political ideologies of the 20th century are rooted in the utopia of cleansing and purity on the one hand and the fear of infection and poisoning on the other.

In our corpus we found that newspapers use the pandemic threat to set up a series of implicit dichotomies which distinguish between the 'purity' of truth, rationality and civilized society and the 'contagion' of a (natural) terrorism, which is projected as the embodiment of uncivilized society and superstition. An outbreak of bird flu in humans could affect politics on a global scale. Cultural scientists and social scientists therefore need to monitor very closely the discourses that emerge and that might congeal into a politics of plague.²

Disaster Metaphors

² A first draft of this paper was presented at the conference "Invisible Enemies: the cultural meaning of infection and the politics of 'plague'", University of Zürich, 21-24 September, 2005. We would like to thank the participants for many useful hints and comments.

The most frequently used metaphors were however not derived from modernity (be it greyhound racing or bioterrorism) but had their conceptual roots in archetypal images of natural or elementary forces such as air, earth, fire and water.

THE VIRUS IS A STORM:

Avian influenza: perfect storm now gathering? (Editorial/Lancet 2005: 82)

We need to put up safeguards while the storm is still gathering (Stöhr, 2005: 407)

This metaphor was then quoted verbatim in *The Independent* (01/01/05) together with a quote including the illocutionary force marker 'warning', turning a pandemic warning into a storm warning. Shortly after we had analysed such warnings Hurricane Katrina caused enormous damage to New Orleans and Louisiana in August 2005. Just like the memories of the Tsunami which revitalised the metaphor of the virus as an earthquake and a flood (see below), this storm impacted on how avian flu warnings were framed.

In the wake of Hurricane Katrina, which demonstrated the high cost of complacency, the world is beginning to heed WHO warnings – health experts from international organizations and officials from more than 65 countries met last week in Washington to discuss a coordinated response to bird flu... (Walsh 2005: 27)

Flu season comes every year as reliably as hurricane season. If we shore up our defences against both, we will be in a much stronger position when the “big ones” hit. (Editorial/Scientific American 2005: 3)

In this case the devastation wrought by hurricane Katrina and the mapping of this past (storm) event together with the mapping of the storm metaphor onto a future pandemic event, gives the storm metaphor an added literal twist and heightens its performative potency. It mobilises the past into the present as well as the future.

THE VIRUS IS AN EARTHQUAKE:

Another expert, Liam Donaldson (quoted in the Daily Telegraph, 02/03/05, Express, 02/03/05, Times, 02/03/05), used a different scenario, not that of a storm gathering, but that of an earthquake. However, the metaphor was only evoked through words associated with *earthquake* in a semantic network, such as *epicentre* and *impact*. It overlaps to some extent with the storm metaphor and the flood metaphor (see below), as in all three cases, earthquake, volcano, and flood, the image is of a catastrophe that starts at a 'source' and then 'sweeps' through its surroundings with unstoppable force. This image became even more salient after 26 December, 2004 when a tsunami, caused by an underwater earthquake, hit populations living on the shores of the Indian Ocean.

The most frequent metaphor used by scientists was that of a flood:

THE VIRUS IS A FLOOD

Past pandemics have typically hit world populations like a flash flood. They have started abruptly and explosively, swept through populations, and left considerable damage in their wake. They could not be stopped but peaked rapidly and subsided almost as abruptly as they begin. (Stöhr, 2005)

Scott Gottlieb's article (in the BMJ) highlights what is now an actual threat to the world's population. The Tsunami in Asia illustrated one acute natural

trauma with thousands of deaths, that catastrophe pales into insignificance when compared with an influenza pandemic. (Higson, BMJ/letter, 2005)

The newspapers did not pick up these metaphors of flooding but used the relatively dead metaphor of 'waves' of an epidemic which had been used by scientists. They also did not make the connection with the Tsunami, despite the fact that there too the sea surges had struck in two waves.

Avian flu is one of a series of 'emerging infectious diseases'. Describing it as a storm, an earthquake, a flood or even a greyhound, has benefits and limitations. Amongst the benefits are the arousal of a sense of urgency, notoriously difficult to provoke on a global level; this might lead to setting a firm agenda for research, to funds being allocated nationally and globally, to nations working together to prevent the spread of the disease and so on. There are also drawbacks, as such metaphors might lead to disaster-prediction-fatigue. Metaphors can therefore be performative in a positive and in a negative sense.

Furthermore, metaphors of a storm, an earthquake and a flood evoke so-called natural disasters over which scientists and policy makers have arguably no control (although, it should be stressed that the term natural disaster is debatable, as the damage done by the Tsunami or hurricane Katrina for example, was 'caused' by building densely populated dwelling places close to the shore). Avian flu has a man-made source - the way poultry is reared in crowded conditions and in close proximity with people. There are options of controlling the disease 'at source' before it (a) mutates (for which it needs a large bird population) and (b) spreads out of control, i.e. becomes a 'flood', 'earthquake' or 'storm', namely slaughter and/or vaccination. The use of natural disaster metaphors may therefore obscure the availability of such options, which are predicated on global support for impoverished nations and are therefore difficult to achieve.

Historical references and references to other diseases

We mentioned above that newspapers often seek to give current events socially recognised meaning by linking them to or anchoring them in historically well-established images. We found in the corpus a strong pattern of reference to previous flu pandemics, in particular to the so-called Spanish Influenza of 1918 (referenced 18 times), the 1968 flu pandemic in Hong Kong and the SARS epidemic of 2003, both of which were referenced 16 times in the corpus. In fact, these historical allusions were more salient even than the 11 references made to the actual primary cause of the avian flu scare - the discovery of the first cases of humans infected with H5N1 in Hong Kong in 1997.

This shift of emphasis to past pandemics contributes to the rhetoric of fear by imbuing the as yet minor bird flu outbreak with historical significance, which obscures the fact that the current strain of avian flu has as yet killed only a relatively small number of people who had direct contact with poultry.

This would seem to suggest that while, as we discussed above, the media does not seem to have been overtly involved in the hyping up of the avian flu virus, the ways in which it has historically framed the pandemic threat continue to reproduce and enhance the rhetoric of fear begun by the scientists. We would argue that this recurrent discourse is performative in representing not a desire to worry unduly an unsuspecting public but to encourage someone to take the blame for what ultimately has, unlike a natural disaster, a man-made cause.

An emergent rhetoric of blame

We mentioned above that the use of natural disaster metaphors might obscure the availability of options for controlling the development and spread of avian flu. A possible explanation for this could be that rather than find a solution to a relatively intractable problem the media would rather apportion blame. On March 5, David Jones wrote a piece of investigative journalism for *The Daily Mail* in which he claimed that

We should not blame the villagers for making this fatal mistake. We should blame Prime Minister Thaksin. From the moment bird-flu broke out in Thailand - probably as early as November 2003 - he and his cronies had staged a cynical cover-up to protect the country's Pounds 750 million poultry export industry.

Although this is the only article that makes an explicit accusation, many other articles were inscribed with the rhetoric of blame and expressed particular exasperation against what was perceived as the British Government's 'wait and see' attitude towards the pandemic threat or its complacency.

A discourse of uncertainty

The two discourses that structured the media coverage of the pandemic threat, that of fear and that of blame, raised quite different expectations, one of urgent action and one of caution, a clash that might have contributed to establishing a general discourse of uncertainty. The uncertainty was especially stark for policy makers who had to be seen to listen to the warnings issued by the scientists but who also had to justify committing already scarce public health resources to funding a response to an unpredictable but potentially catastrophic event. In their attempts to consolidate the reality of the pandemic threat, both the media and the experts constructed the avian flu virus as something unknown and above all alien (often referring to the virus as a 'mutant' one). The problem with this is that while it may create the kind of benefits for society that we have identified, it also mitigates the perceived potential for fighting back against a threat which is extremely virulent, but more worryingly, unpredictable and invisible.

Conclusion

In this paper we have tried to link the sociology of metaphor to the sociology of expectations via insights from pragmatics, arguing that both metaphors and expectations can have a performative force and adding to this the analysis of pragmatic markers that can work as risk signals and amplify the message that scientists want to convey, the expectations they want to create and the actions they want the audience of their 'early warnings' to perform.

In 2003 Brown wrote:

When we examine the journeys or travels that biotechnology expectations make in their passage from laboratory to the news page it is absolutely clear that it is no longer possible to go on simply blaming the media for hyping things up. Research communities are crucial participants in the production of hype. (Brown 2003: 14)

We have shown that it is not possible to blame the media entirely for hyping up fears about a global pandemic of bird flu, at least as far as the coverage in UK national newspapers in mid-2005 is concerned. Research communities, global and local, scientific journal editors, as well as various government officials and pandemic 'pundits' were crucial participants in the production of awareness, fear and the attribution of blame. The media can however pragmatically amplify the message that the scientists want to convey and therefore intensify an emergent rhetoric of fear, blame and uncertainty. The emergent rhetoric of fear and blame in a climate of uncertainty has consequences for the relation between science and society, the public understanding of science and for the policy making process. Raising expectations, be it of risk in the case of avian flu or of bounty in the case of biotechnology, is a difficult balancing process, between overstating the case and understating the case, and between shoring up trust in promises/warnings or eroding it. Disparities between expectations and eventual realities can also have "serious costs in terms of reputations, misallocated resources and investment" (Brown 2003:

1), for example in drug development, especially antivirals and vaccines, or in the distortion of policy priorities regarding animal and human health, the diversion or misallocation of funds and so on.

So far we have argued that it is possible to use insights from the sociology of expectations to shed light on some aspects of the media coverage surrounding avian influenza. However, it is also necessary to reflect on possible ways in which the nexus between the media analysis of avian flu and the sociology of expectations might break down. The sociology of positive expectations deals with how new technologies 'come into being'. The sociology of negative expectations, at least in this case, does not deal with how a pandemic 'comes into being' but with how audience reactions come into being. In the case of 'positive' expectations, studied by Brown and others in relation to biotechnology, the outcome for the promoter of a new biotechnological advance depends on whether the expectations attached to it come true or not. In the case of negative expectations, associated in our case with a pandemic of avian flu the outcome for the promoter is not dependent on whether or not the expectation comes true, but on the actions that the audience takes. For this case then, there are two variables: whether people will take action or not based on the negative expectation and whether or not the expectation will come true or not. First scenario: the audience does not take any action. If the pandemic arises then the promoters of the negative expectation are vindicated. However, if the pandemic does not arise, then the promoters are discredited. Second scenario: the audience takes some sort of action. If the pandemic occurs, the promoters can say that the audience did not take enough action. If the pandemic does not occur, the promoters can say that whatever measures taken by the audience (slaughter, vaccination, antivirals, quarantine, etc.) were enough to contain the pandemic.

There is therefore seems to be a difference between positive and negative expectations that needs to be further explored. One could say that negative expectations are a self-fulfilling prophesy to the extreme. The outcome affects the promoter negatively only if the audience does not act. The important thing here is

that once the audience takes some form of action, the promoters are vindicated. The blame is not on them. In fact, there is only one way in which the blame can go to the promoter, if the audience does not act and the predictions do not come true. Expectations have to be performative then, in the sense of making the audience act in certain ways. But there are differences between early promises and early warnings, differences that have to be examined in more detail in the future.

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